FIG.1A
Background Art

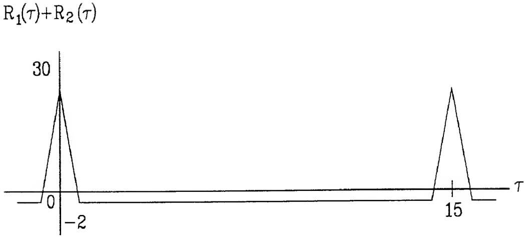


FIG.1B
Background Art

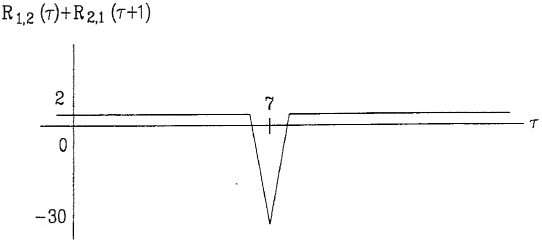


FIG. 2A
Background Art

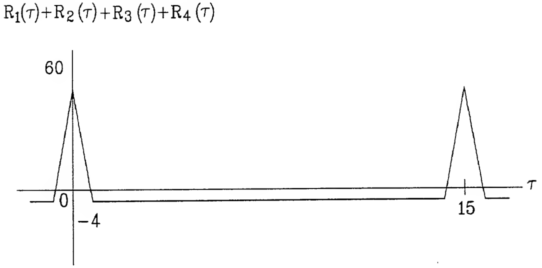


FIG. 2B
Background Art

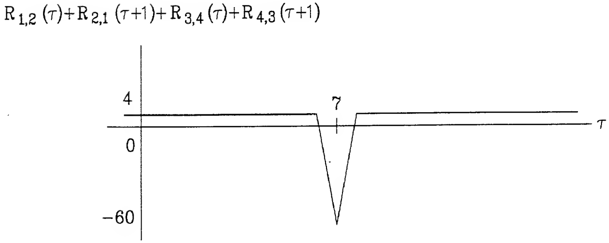
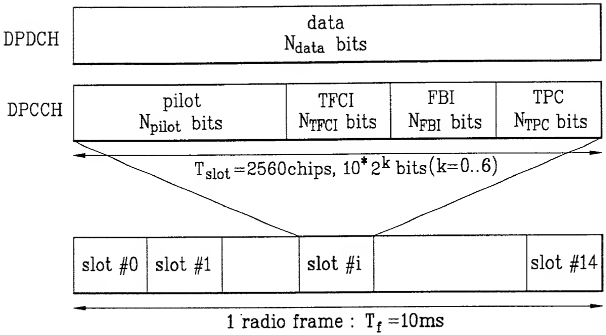
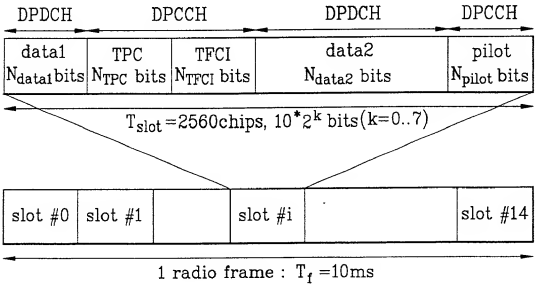


FIG. 3



DPDCH
data
N_{data} bits
DPCCH
pilot
N_{pilot} bits
TFCI
N_{TFCI} bits
FBI
N_{FBI} bits
TPC
N_{TPC} bits
T_{slot}=2560chips, $10^{*}2^{k}$ bits(k=0..6)
slot #0
slot #1
slot #i
slot #14
1 radio frame : T_f =10ms

FIG. 4



DPDCH
DPCCH
DPDCH
DPCCH
data1
N_{data1} bits
TPC
N_{TPC} bits
TFCI
N_{TFCI} bits
data2
N_{data2} bits
pilot
N_{pilot} bits
T_{slot}=2560chips, $10^{*}2^{k}$ bits(k=0..7)
slot #0
slot #1
slot #i
slot #14
1 radio frame : T_f =10ms

FIG.5

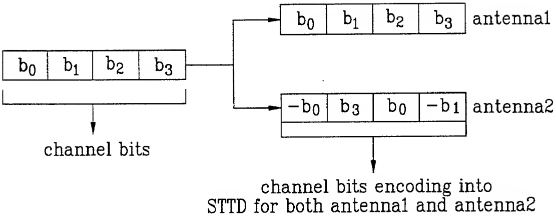

b0 | b1 | b2 | b3
antenna1
b0 | b1 | b2 | b3
channel bits
−b0 | b3 | b0 | −b1
antenna2
channel bits encoding into
STTD for both antenna1 and antenna2

FIG. 6

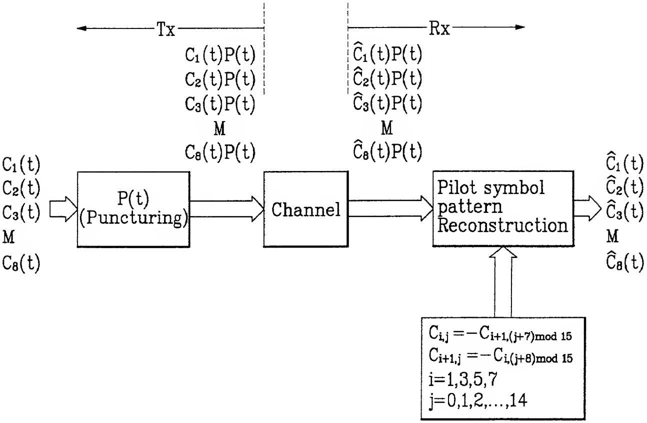

Tx
Rx
C1(t)P(t)
C2(t)P(t)
C3(t)P(t)
M
C8(t)P(t)
Ĉ1(t)P(t)
Ĉ2(t)P(t)
Ĉ3(t)P(t)
M
Ĉ8(t)P(t)
C1(t)
C2(t)
C3(t)
M
C8(t)
P(t)
(Puncturing)
Channel
Pilot symbol pattern Reconstruction
Ĉ1(t)
Ĉ2(t)
Ĉ3(t)
M
Ĉ8(t)
Ci,j = −Ci+1,(j+7)mod 15
Ci+1,j = −Ci,(j+8)mod 15
i=1,3,5,7
j=0,1,2,…,14

FIG. 7

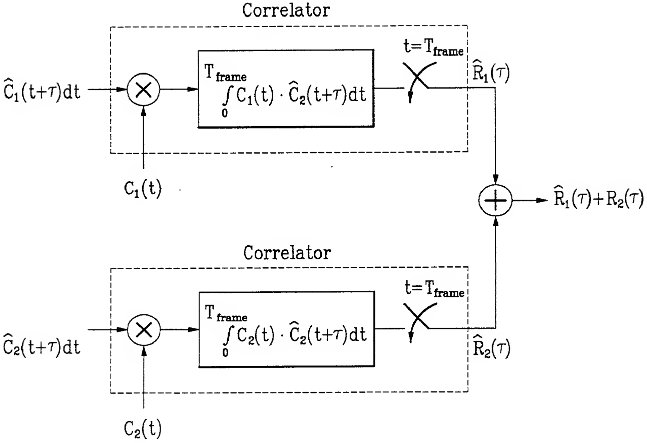
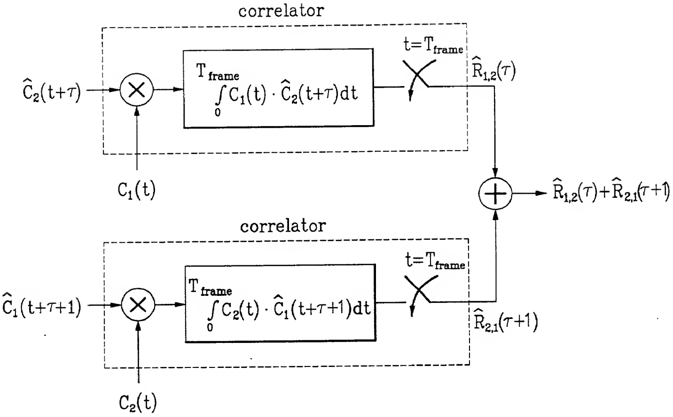
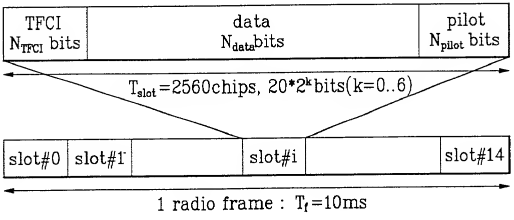

Correlator
$\hat{C}_1(t+\tau)dt$
$\int_0^{T_{frame}} C_1(t)\cdot\hat{C}_2(t+\tau)dt$
$t=T_{frame}$
$\hat{R}_1(\tau)$
$C_1(t)$
$\hat{R}_1(\tau)+R_2(\tau)$
Correlator
$\hat{C}_2(t+\tau)dt$
$\int_0^{T_{frame}} C_2(t)\cdot\hat{C}_2(t+\tau)dt$
$t=T_{frame}$
$\hat{R}_2(\tau)$
$C_2(t)$

FIG. 8



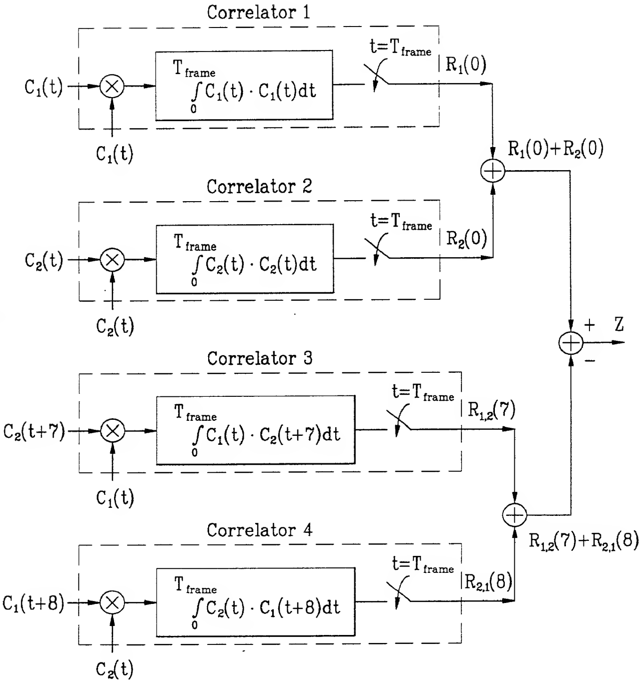
correlator
$\hat{C}_2(t+\tau)$
$\int_0^{T_{frame}} C_1(t)\cdot\hat{C}_2(t+\tau)dt$
$t=T_{frame}$
$\hat{R}_{1,2}(\tau)$
$C_1(t)$
$\hat{R}_{1,2}(\tau)+\hat{R}_{2,1}(\tau+1)$
correlator
$\hat{C}_1(t+\tau+1)$
$\int_0^{T_{frame}} C_2(t)\cdot\hat{C}_1(t+\tau+1)dt$
$t=T_{frame}$
$\hat{R}_{2,1}(\tau+1)$
$C_2(t)$

FIG. 9



TFCI
N_{TFCI} bits
data
N_{data}bits
pilot
N_{pilot} bits
T_{slot}=2560chips, 20*2^kbits(k=0..6)
slot#0
slot#1
slot#i
slot#14
1 radio frame : T_f=10ms

FIG.10



Correlator 1
$C_1(t)$
$\int_0^{T_{frame}} C_1(t) \cdot C_1(t)dt$
$t=T_{frame}$
$R_1(0)$
$C_1(t)$
$R_1(0)+R_2(0)$
Correlator 2
$C_2(t)$
$\int_0^{T_{frame}} C_2(t) \cdot C_2(t)dt$
$t=T_{frame}$
$R_2(0)$
$C_2(t)$
+
Z
−
Correlator 3
$C_2(t+7)$
$\int_0^{T_{frame}} C_1(t) \cdot C_2(t+7)dt$
$t=T_{frame}$
$R_{1,2}(7)$
$C_1(t)$
$R_{1,2}(7)+R_{2,1}(8)$
Correlator 4
$C_1(t+8)$
$\int_0^{T_{frame}} C_2(t) \cdot C_1(t+8)dt$
$t=T_{frame}$
$R_{2,1}(8)$
$C_2(t)$